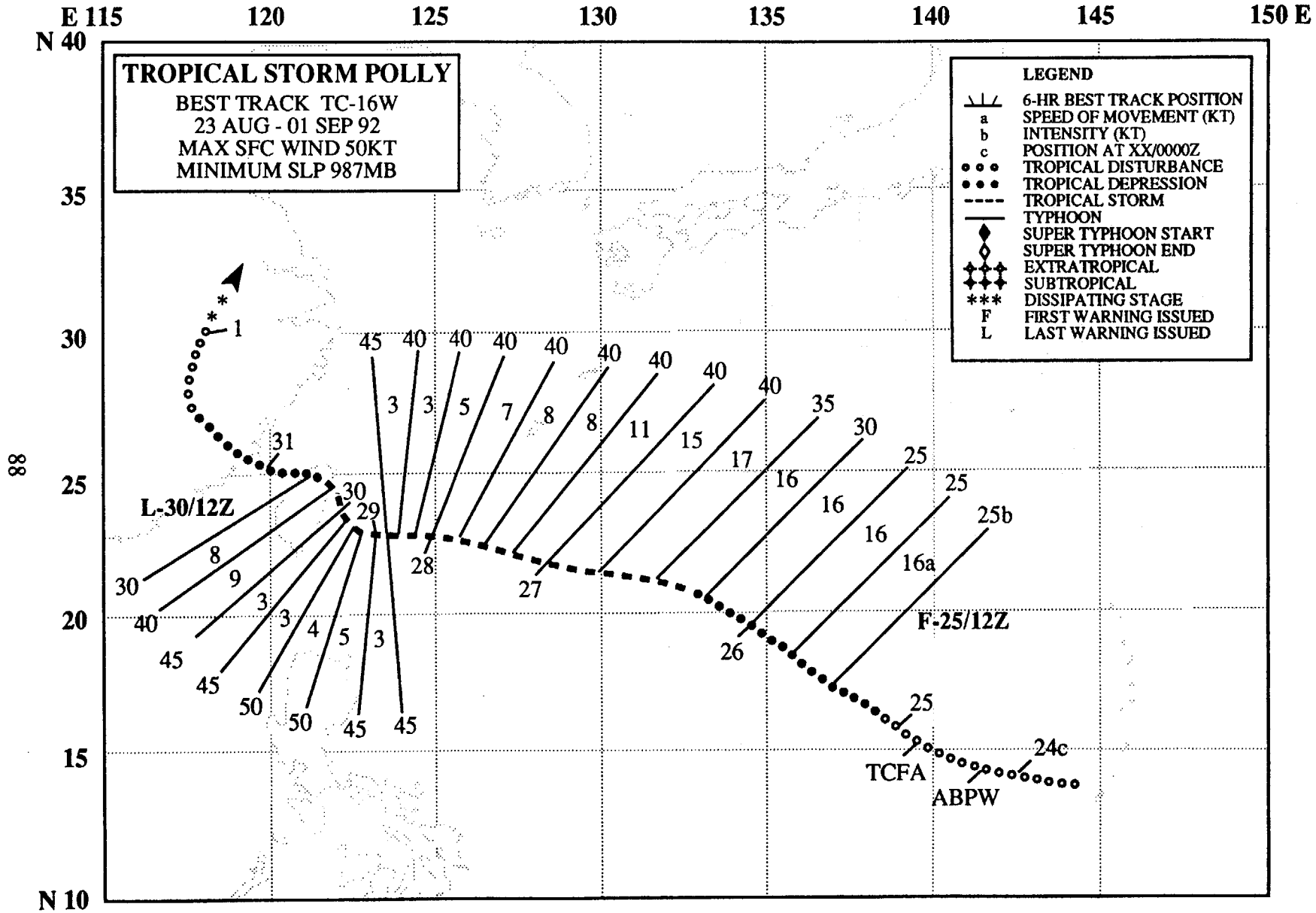
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TROPICAL STORM POLLY
BEST TRACK TC-16W
23 AUG - 01 SEP 92
MAX SFC WIND 50KT
MINIMUM SLP 987MB
LEGEND
6-HR BEST TRACK POSITION
a SPEED OF MOVEMENT (KT)
b INTENSITY (KT)
c POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
SUBTROPICAL
*** DISSIPATING STAGE
F FIRST WARNING ISSUED
L LAST WARNING ISSUED
L-30/12Z
F-25/12Z
TCFA
ABPW

TROPICAL STORM POLLY (16W)

I. HIGHLIGHTS

The eighth and final significant tropical cyclone of August, Polly developed along with Omar (15W) as part of a major relocation of the monsoonal trough. Polly was unusual in that throughout most of its life, it maintained the pattern of a monsoon depression with a ring of peripheral gales and a broad band of deep convection around a large, relatively cloud free, central area of light-and-variable winds. The outflow aloft from this tropical storm appeared to play an important role in delaying the intensification of Typhoon Omar (15W), when the typhoon was approaching Guam. Although Polly never reached typhoon intensity, it did have quite an impact on eastern Asia.

II. TRACK AND INTENSITY

On 24 August, as the low-level southwesterly flow built westward across the Philippine Sea reestablishing the monsoon trough, the disturbance that developed into Polly appeared as an area of persistent convection just west of Guam. The tropical disturbance was first discussed on the 240600Z Significant Tropical Weather Advisory. A cell in the tropical upper-tropospheric trough (TUTT) dug in west of the disturbance, enhancing the outflow and convective organization through the night . This caused JTWC to issue a Tropical Cyclone Formation Alert at 241900Z. The disturbance continued to increase in organization and began to separate from the general monsoon cloudiness. At 251200Z, JTWC issued the first warning on Tropical Depression 16W. The depression slowly intensified, and was upgraded to a tropical storm at 270000Z. Post analysis indicates that Polly was probably became a tropical storm about 12 hours earlier, at 261200Z.

From 25 to 27 August, the tropical storm moved to the west-northwest at an average speed of 16 kt (30 km/hr). From 27 to 29 August, Polly gradually slowed from 15 to 3 kt (28 to 6 km/hr) of motion, as it approached Taiwan, and became the anchor-low of the major western North Pacific monsoon gyre which was northeast-southwest oriented across the South China Sea. At 290600Z, Polly reached its peak intensity of 50 kt (26 m/sec). During the next 24 hours, it drifted slowly to the northwest, then made landfall on northeastern Taiwan at 300600Z (Figure 3-16-1). The tropical storm weakened to a depression over mountainous Taiwan and accelerated into southeastern China on 31 August where strong upper-level winds from the east Asian upper-level tropical easterly jet sheared the central convection from Polly's center and the tropical cyclone dissipated on 1 September.

During its life, Polly never developed a core of persistent central convection. With a large, poorly defined eye, Polly took on the characteristics of a monsoon depression with a band of strong low-level winds displaced to the east and north some 150-400 nm (280-740 km) from the center and relatively weak winds to the west and southwest (Figure 3-16-2).

From late 26 to late 27 August, Polly's upper-level outflow increased dramatically to the northeast and imposed strong upper-level shear on Typhoon Omar (15W) to the east. The increased subsidence between the two storms build a mid-level ridge between them which temporarily blocked the westward motion of Omar. The shear also slowed Omar's intensification. However, once the distance between the two storms increased and the shear abruptly decreased on the morning of 28 August Omar began to rapidly intensify. Thus, Polly greatly affected the behavior of Omar.

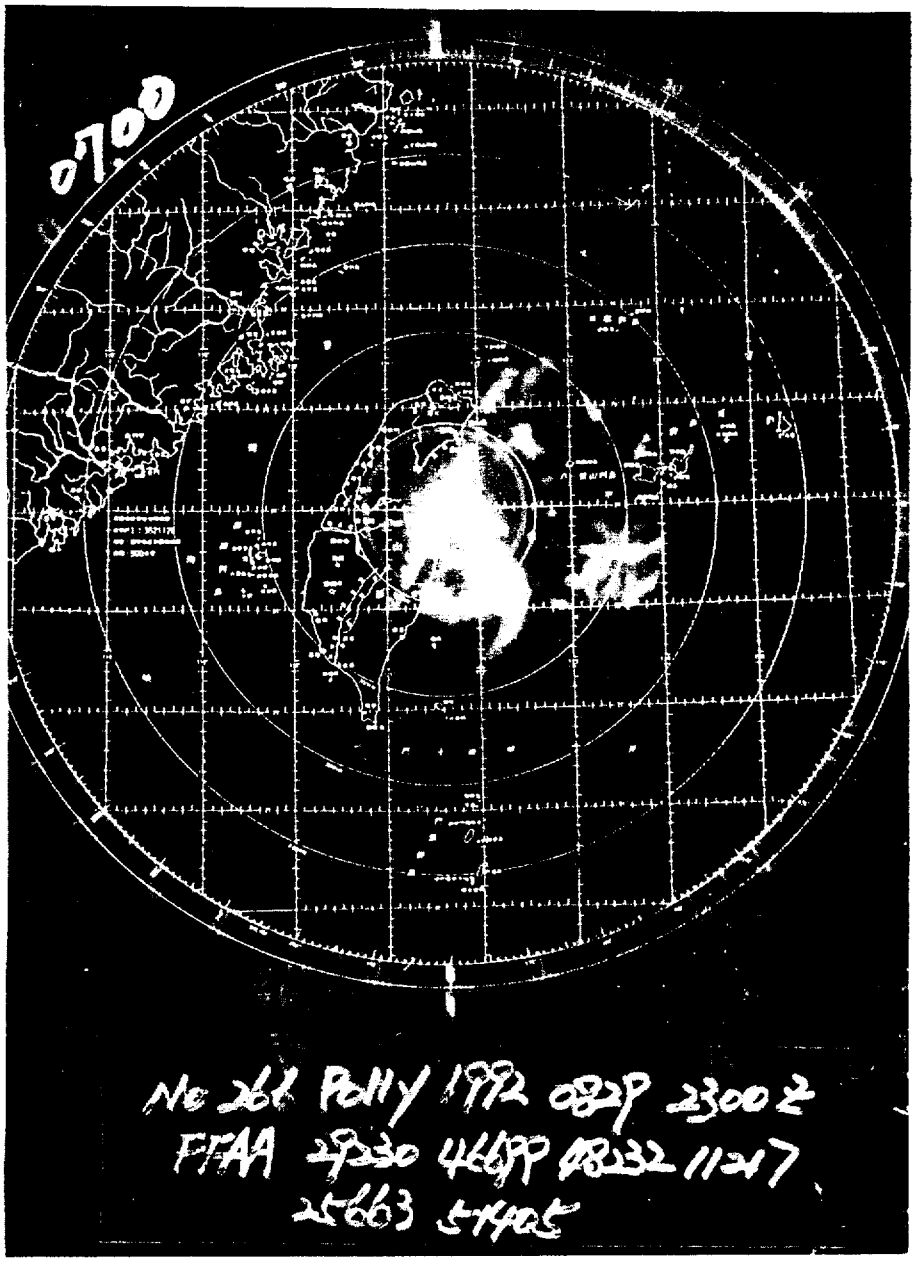

Figure 3-16-1. Although Polly is weakening, its eye remain's visible on the radar at Hualein (WMO 46699) (292300Z August radar photo courtesy of the Central weather Bureau, Taipei, Taiwan).

III. FORECAST PERFORMANCE

Overall JTWC mean track forecast errors were worse than normal at 12 to 24 hours, but better at 48 and 72 hours. This was primarily the result of relatively large along-track or speed errors for the short range forecasts, but relatively low cross-track or pointing errors for all of the forecasts. Forecasters did not expect the anchor-low of the monsoon trough to immediately accelerate to the west-northwest in the early stages. They did not anticipate the slow down that began on 28 August. As Polly moved westward, forecasters slowed the tropical cyclone's motion to more climatological speeds. This allowed the longer range forecasts to benefit from Polly's slow speed near Taiwan.

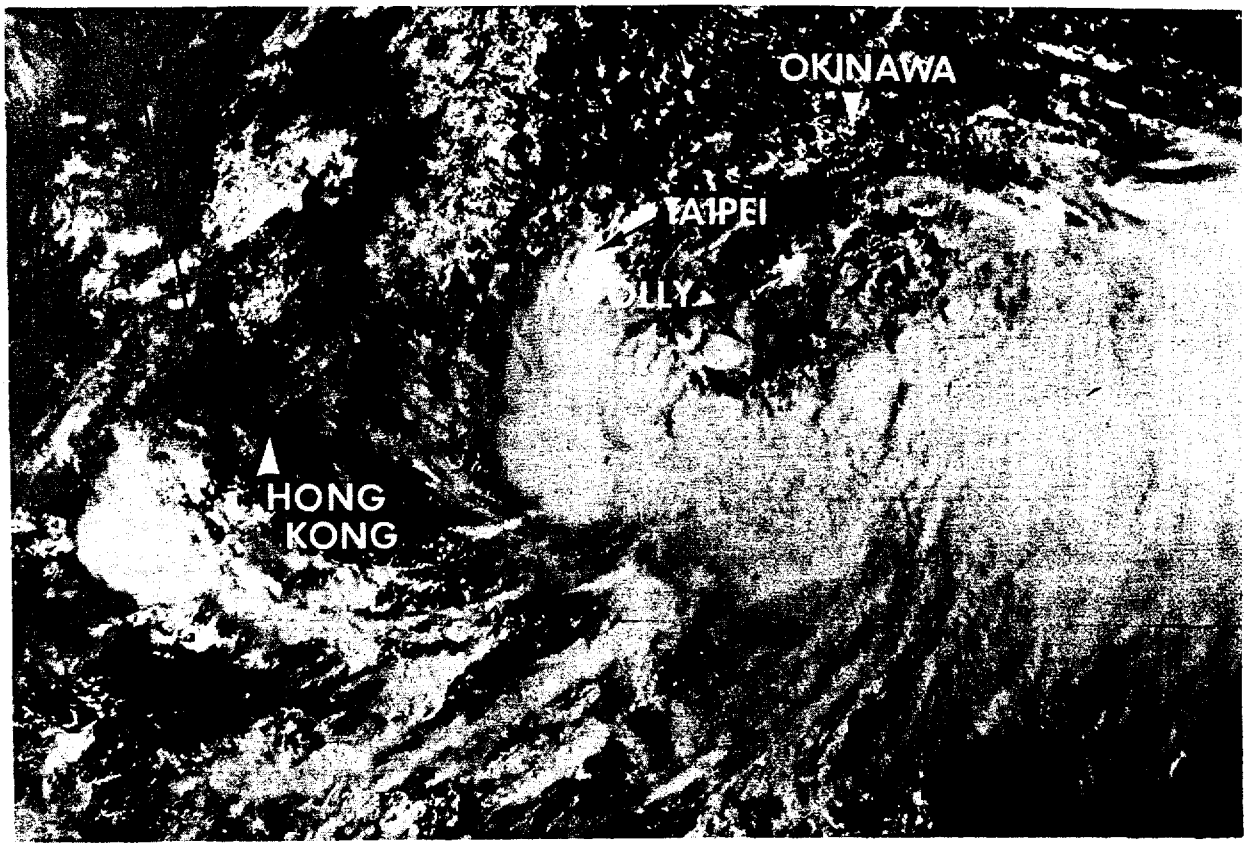

Figure 3-16-2. Polly's large, relatively cloud free, circulation center is supported by a deep band of convection to the south (280107Z August DMSP visual imagery).

JTWC accurately anticipated slow development and only development to minimum typhoon intensity. As a result, average intensity forecast errors for the first 48 hours were 10 kt (5 m/sec) or less. Seventy-two hour forecast errors were 19 kt (10 m/sec), primarily as a result of early forecasts anticipating peaking in three days instead of the observed five days.

In general, the dynamic models performed poorly on Polly. However, the FNOC Beta Advection Model (FBAM) in the mean out performed all of the forecast guidance. This model seems to do well with the motion of cyclones associated with large monsoon gyres. JTWC forecasts were superior to CLIPER at 24 hours, but nearly identical at 48 and 72 hours.

IV. IMPACT

Polly's greatest impact to forecasters was its effect on Typhoon Omar's (15W) motion and intensity. Polly created more than three days of gale- or near gale-force winds over Okinawa and the north Ryukyu Islands. The strong cross winds hampered flying operations on Okinawa, even though Polly never got closer than 300 nm (555 km). In northern Luzon, the torrential rains, associated with Polly's passage to the north, caused lahars, or steaming mudflows, on the slopes of Mount Pinatubo that claimed five lives. On Taiwan, Polly's rain and wind were responsible for at least eight fatalities, widespread flooding that inundated thousands of homes and acres of farmland, and electrical power outages. As the remnants of the tropical storm slammed into southeastern China, heavy rains and flooding led to at least 165 deaths, the loss of 11,000 homes, 1400 fishing boats, and thousands of livestock.